

CLAIMS

1. A device comprising:

5 a first input portion for receiving a first input signal;  
a first output portion for outputting a first output signal; and  
a first voltage dropping means for dropping a voltage on a first node before  
changing from a state in which said first input portion is disconnected from said first node  
to a state in which said first input portion is connected to said first node, said first node  
located between said first input portion and said first output portion.

10

2. A voltage converting device for receiving a first input signal having a first  
high input voltage and a first low input voltage, said first high input voltage having a  
relatively high voltage level and said first low input voltage having a relatively low  
voltage level,

15

wherein said voltage converting device converts at least one of said first  
high input voltage and said first low input voltage and outputs said first input signal  
having a converted voltage level as a first output signal,

wherein said voltage converting device comprises:

20 a first input portion for receiving said first input signal;  
a first output portion for outputting said first output signal; and  
a voltage converting means for converting at least one of said first high input voltage  
and said first low input voltage,

25 and wherein said voltage converting means comprises a first voltage  
dropping means for dropping a voltage on a first node before changing from a state in  
which said first input portion is disconnected from said first node to a state in which said  
first input portion is connected to said first node, said first node located between said first  
input portion and said first output portion.

3. A voltage converting device as claimed in claim 2, wherein said voltage  
30 converting means comprises first conversion voltage supplying part for supplying said  
first node with a first conversion voltage for converting one of said first high input  
voltage and said first low input voltage, said first conversion voltage having a higher  
voltage level than said first high input voltage,

35 and wherein said first voltage dropping means drops a voltage on said first node,  
before changing from a state in which said first input portion is disconnected from said  
first node and said first conversion voltage supplying part is connected to said first node  
to a state in which said first input portion is connected to said first node.

4. A voltage converting device as claimed in claim 3, wherein said voltage converting means comprises second conversion voltage supplying part for supplying said first node with a second conversion voltage for converting the other of said first high input voltage and said first low input voltage, said second conversion voltage having a voltage level lower than or equal to said first high input voltage,
  - 5 and wherein said first voltage dropping means connects said second conversion voltage supplying part instead of said first conversion voltage supplying part to said first node, before changing from a state in which said first input portion is disconnected from said first node and said first conversion voltage supplying part is connected to said first node to a state in which said first input portion is connected to said first node.
- 10 5. A voltage converting device as claimed in claim 4, wherein said first voltage dropping means comprises:
  - 15 a first switching means for making a first connection state in which said second conversion voltage supplying part is connected to said first node and a first disconnection state in which said second conversion voltage supplying part is disconnected from said first node; and
  - 20 a first driving circuit for driving said first switching means.
6. A voltage converting device as claimed in claims 4 or 5, wherein said second conversion voltage has the same voltage level as said first low input voltage.
- 25 7. A voltage converting device as claimed in claim 2, wherein said voltage converting device receives a second input signal having a second high input voltage and a second low input voltage, said second high input voltage having a relatively high voltage level and said second low input voltage having a relatively low voltage level,
  - 30 wherein said voltage converting device converts at least one of said second high input voltage and said second low input voltage and outputs said second input signal having a converted voltage level as a second output signal.

8. A voltage converting device as claimed in claim 7, wherein said voltage converting device comprises second input portion for receiving said second input signal and second output portion for outputting said output signal,
  - 35 and wherein said voltage converting means comprises a second voltage dropping means for dropping a voltage on a second node before changing from a state in which said second input portion is disconnected from a second node to a state in which said second

input portion is connected to said second node, said second node located between said second input portion and said second output portion.

9. A voltage converting device as claimed in claim 8, wherein said voltage  
5 converting means comprises first conversion voltage supplying part for supplying said first node with a first conversion voltage for converting one of said first high input voltage and said first low input voltage, said first conversion voltage having a higher voltage level than said first high input voltage,  
and wherein said first voltage dropping means drops a voltage on said first node,  
10 before changing from a state in which said first input portion is disconnected from said first node and said first conversion voltage supplying part is connected to said first node to a state in which said first input portion is connected to said first node.
10. A voltage converting device as claimed in claim 9, wherein said voltage  
15 converting means comprises second conversion voltage supplying part for supplying said first node with a second conversion voltage for converting the other of said first high input voltage and said first low input voltage, said second conversion voltage having a voltage level lower than or equal to said first high input voltage,  
and wherein said first voltage dropping means connects said second conversion  
20 voltage supplying part instead of said first conversion voltage supplying part to said first node, before changing from a state in which said first input portion is disconnected from said first node and said first conversion voltage supplying part is connected to said first node to a state in which said first input portion is connected to said first node.
- 25 11. A voltage converting device as claimed in claim 10, wherein said voltage  
converting means comprises third conversion voltage supplying part for supplying said second node with a third conversion voltage for converting one of said second high input voltage and said second low input voltage, said third conversion voltage having a higher voltage level than said second high input voltage,  
30 and wherein said second voltage dropping means drops a voltage on said second node, before changing from a state in which said second input portion is disconnected from said second node and said third conversion voltage supplying part is connected to said second node to a state in which said second input portion is connected to said second node.
- 35 12. A voltage converting device as claimed in claim 11, wherein said voltage  
converting means comprises fourth conversion voltage supplying part for supplying said

22

second node with a fourth conversion voltage for converting the other of said second high input voltage and said second low input voltage, said fourth conversion voltage having a voltage level lower than or equal to said second high input voltage,

and wherein said second voltage dropping means connects said fourth conversion voltage supplying part instead of said third conversion voltage supplying part to said second node, before changing from a state in which said second input portion is disconnected from said second node and said third conversion voltage supplying part is connected to said second node to a state in which said second input portion is connected to said second node.

10

13. A voltage converting device as claimed in claim 12, wherein said first voltage dropping means comprises:

a first switching means for making a first connection state in which said second conversion voltage supplying part is connected to said first node and a first disconnection state in which said second conversion voltage supplying part is disconnected from said first node; and

a first driving circuit for driving said first switching means.

14. A voltage converting device as claimed in claim 13, wherein said second voltage dropping means comprises:

a second switching means for making a second connection state in which said third conversion voltage supplying part is connected to said second node and a second disconnection state in which said third conversion voltage supplying part is disconnected from said second node; and

25 a second driving circuit for driving said second switching means.

15. A voltage converting device as claimed in claim 14, wherein said first driving circuit further plays a role as said second driving circuit.

30 16. A voltage converting device as claimed in claim 15, wherein said second conversion voltage comprises the same voltage level as said first low input voltage.

17. A voltage converting device as claimed in claim 16, wherein said fourth conversion voltage comprises the same voltage level as said second low input voltage.

35

18. A voltage converting device as claimed in claim 17, wherein said first conversion voltage supplying part plays a role as said third conversion voltage supplying part,

23

and wherein said second conversion voltage supplying part plays a role as said fourth conversion voltage supplying part.

19. A voltage converting device as claimed in claim 18, wherein said first conversion  
5 voltage is equal to the said third conversion voltage,  
and wherein said second conversion voltage is equal to the said fourth conversion  
voltage.